

Electrical Industry Construction Training Criteria (Residential)

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<i>Date:</i> <i>Name of College:</i>	COURSE(S)	COURSE TITLE	LEC	LAB	Course
	ID or Number				Outline
I. SAFETY					
A. General jobsite safety awareness					
B. Emergency procedures					
C. Compliance with OSHA and EPA regulations					
D. Substance Abuse					
II. TOOLS, MATERIALS, AND HANDLING					
A. Proper tool management					
B. Proper rigging methods					
C. Proper digging techniques					
D. Proper use of motorized tools (use of platform lifts, bucket trucks, and truck-mounted cranes)					
E. Proper material management					
III. MATH					
A. Appropriate mathematical calculations to solve for unknowns					
IV. ELECTRICAL THEORY					
A. Basic electrical theory					
B. Ohm's law, Kirchoff's laws, Lenz's law, Thevenin's law and Nortons Theorems					
C. Series circuits					
D. Parallel circuits					
E. Combination circuits					
F. Characteristics of voltages in circuits					
G. Characteristics of magnetism/electromagnetism					
H. Theory of superposition and solving for multiple voltage sources circuits					
I. Operation and characteristics of three wire systems					
J. Operation and characteristics of three phase systems					
K AC Theory					

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V. CODE REQUIREMENTS					
A. National Electrical Code and local codes					
VI. CONDUCTORS					
A. Various types of conductors					
B. Conductor installation techniques					
C. Methods for selecting conductors					
D. Cable fault situations					
VII. CONDUIT, RACEWAYS, PANELBOARDS AND SWITCHBOARDS					
A. Terms associated with conduits and raceways					
B. Conduit and wiring support systems recognized by Code					
C. Procedures for laying out various types of bends					
D. Procedures for making bends when fabricating conduits					
E. Fabricating raceways and wiring support systems					
F. Cable assembly wiring methods recognized by the Code					
G. Function, operation and requirements for various panelboards and switch gear					
VIII. LIGHTING SYSTEMS					
A. Function, operation and characteristics of various lighting systems					
B. Lighting distribution and layout					
C. Installation and connection of fixtures					
VIV. OVERCURRENT DEVICES					
A. Function, operation and characteristics of overcurrent protection devices					

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X. GROUNDING SYSTEMS					
A. Functions, operation and characteristics of grounding systems					
B. Sizing, layout and installation of grounding systems					
C. Difference between insulation, isolation and elevation					
D. Difference between grounding, grounded, and bonding					
E. Special circumstances					
XI. PRINTS AND SPECIFICATIONS					
A. Creation of blueprints, plans and specifications					
B. Symbols used in electrical and related trades					
C. Use of blueprints, plans and specifications					
XII. MOTORS, MOTOR CONTROLLERS AND PROCESS CONTROLLERS					
A. Function, operation and characteristics of various types of motors (AC, DC, dual voltage, repulsion, universal, 3 phase, squirrel cage, synchronous)					
B. Proper techniques for motor installations					
C. Function, operation and characteristics of motor controllers, circuits and devices					
D. Function, operation and characteristics of switches and relays					
E. Mechanical connections to utilize motors					
F. Process control systems and devices					
XIII. GENERATORS AND POWER SUPPLIES					
A. Principles of electromotive force					
B. Principles of generating electricity					
C. Types and configurations of uninterruptible power supplies (UPS)					

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D. Types and configurations of battery systems used for UPS systems					
XIV. TRANSFORMERS					
A. Function, operation, and characteristics of transformers					
B. Selection and installation of transformers					
C. Distribution systems					
XV. PERSONAL DEVELOPMENT					
A. Orientation					
B. Methods of working with others					
C. Economic considerations					
XVI. JOBSITE MANAGEMENT					
A. Coordinating tool needs with office of other jobs					
B. Coordinating schedule with other crafts					
C. Developing timetables and progress charts					
D. Completing time sheets, logs and other necessary documentation					
E. Clearances or permits if necessary					
F. Inventory and order necessary equipment according to job needs					
G. Developing alternative solutions and choose the best alternative					
H. Planning and organizing tasks to meet deadlines					
I. Supervising and monitoring others					
J. Picturing the way the project will appear when completed					
XVII. TESTING					
A. Steps used for various testing processes					
B. Utilizing the results of testing procedures					

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XVIII. SPECIALTY SYSTEMS					
A. Fire Alarms					
B. Security Alarms					
C. Voice, Data, TV, Signaling Systems					
D. Lightning Protection Systems					
E. Fiber Optic Systems					
F. Heating, Air Conditing and Refrigeration					

